

Amendments to the Claims

1. (Currently amended) A method for enhancing the intracellular delivery of a nucleic acid-based drug in a mammal comprising administering to the mammal, in combination with the nucleic acid-based drug, an enhancer in an amount effective to enhance the intracellular delivery of the nucleic acid-based drug,

wherein said enhancer consists of a fatty acid or an ether, salt or anionic derivative thereof, wherein said fatty acid has a carbon chain length of from 8 to 14 carbon atoms;

said intracellular delivery is delivery into the cytoplasm and/or nucleus of a cell resulting in homogenous distribution of the nucleic acid-based compound in the cytoplasm and/or nucleus; and

said intracellular delivery is facilitated by contacting said cell with an effective concentration of said enhancer; and

wherein the amount of enhancer effective to enhance the intracellular delivery is about 0.01mM to 30mM when said enhancer has a carbon chain length of from 9 to 14 carbon atoms and 0.01mM to 120mM when said enhancer has a carbon chain length of 8 carbon atoms.

2. to 42. (Canceled)

43. (Previously presented) The method of claim 1 wherein the enhancer is caprylic acid, nonanoic acid, capric acid, or an ether, salt or an anionic derivative thereof.

44. (Previously presented) The method of claim 43 wherein the enhancer is caprylic acid, capric acid or an ether, salt or an anionic derivative thereof.

45. (Previously presented) The method of claim 44 wherein the enhancer is caprylic acid or an ether, salt or an anionic derivative thereof.

46. (Previously presented) The method of claim 1 wherein the enhancer is a sodium salt of a fatty acid.

47. (Previously presented) The method of claim 1 wherein said cell is an epithelial cell.

48. (Previously presented) The method of claim 1 wherein said cell is from the gastrointestinal tract.

49. (Currently amended) The method ~~or use~~ of claim 48 wherein said cell is in the small intestine.

50. (Previously presented) The method of claim 1, wherein the nucleic acid-based drug is selected from the group consisting of an oligonucleotide, an antisense oligonucleotide, a plasmid DNA, a gene, a ribozyme, a gene-correcting oligonucleotide, a triple-helix forming oligonucleotide, and an oligonucleotide which functions as an adjuvant.

51. (Previously presented) The method of claim 50, wherein said oligonucleotide is selected from the group consisting of an oligonucleotide having a modified backbone chemistry, an oligonucleotide having a modified sugar or terminal group, a chimeric oligonucleotide comprised of nucleotides of different chemistries, and an oligonucleotide having MOE chemistry.

52. (Currently amended) The method ~~or use~~ of claim 51, wherein said nucleic acid-based drug is a the gene and said gene is selected from the group consisting of a gene coding for a protein, a gene coding for an RNA molecule which functions in an antisense capacity when expressed within mammalian cells and a gene coding for a ribozyme.

53. (Canceled)

54. (Canceled)

55. (Previously presented) The method of claim 1, wherein the molar ratio of the enhancer to the nucleic acid-based drug is 1:100 to 100:1.

56. (Previously presented) The method of claim 1, wherein the enhancer is prepared in a form suitable for oral administration.

57. (Currently amended) A The method of claim 1 for enhancing the intracellular delivery of a nucleic acid-based drug in a mammal wherein the nucleic acid-based drug is complexed with a cationic lipid comprising administering to the mammal, in combination with the nucleic acid-

based drug, an enhancer in an amount effective to enhance the intracellular delivery of the nucleic acid-based drug,

wherein said enhancer consists of a fatty acid or an ether, salt or anionic derivative thereof, wherein said fatty acid has a carbon chain length of from 8 to 14 carbon atoms;

said intracellular delivery is delivery into the cytoplasm and/or nucleus of a cell resulting in homogenous distribution of the nucleic acid-based compound in the cytoplasm and/or nucleus;
and

said intracellular delivery is facilitated by contacting said cell with an effective concentration of said enhancer.

58. (Currently amended) A ~~The method of claim 1~~ for enhancing the intracellular delivery of a nucleic acid-based drug in a mammal wherein the nucleic acid-based drug is complexed with a polymer system comprising administering to the mammal, in combination with the nucleic acid-based drug, an enhancer in an amount effective to enhance the intracellular delivery of the nucleic acid-based drug,

wherein said enhancer consists of a fatty acid or an ether, salt or anionic derivative thereof, wherein said fatty acid has a carbon chain length of from 8 to 14 carbon atoms;

said intracellular delivery is delivery into the cytoplasm and/or nucleus of a cell resulting in homogenous distribution of the nucleic acid-based compound in the cytoplasm and/or nucleus;
and

said intracellular delivery is facilitated by contacting said cell with an effective concentration of said enhancer.

59. (Currently amended) A ~~The method of claim 1~~ for enhancing the intracellular delivery of a nucleic acid-based drug in a mammal wherein the nucleic acid-based drug is entrapped in a polymer system comprising administering to the mammal, in combination with the nucleic acid-based drug, an enhancer in an amount effective to enhance the intracellular delivery of the nucleic acid-based drug,

wherein said enhancer consists of a fatty acid or an ether, salt or anionic derivative thereof, wherein said fatty acid has a carbon chain length of from 8 to 14 carbon atoms;

said intracellular delivery is delivery into the cytoplasm and/or nucleus of a cell resulting in homogenous distribution of the nucleic acid-based compound in the cytoplasm and/or nucleus; and
said intracellular delivery is facilitated by contacting said cell with an effective concentration of said enhancer.

60. (Currently amended) The method ~~or use~~ of claim 58 or 59, wherein the polymer system is selected from the group consisting of a polyethyleneimine system, a polyanhydride system, a chitosan system, a cellulose system, a dendrimeric based system, and PLGA particles.

61. (Currently amended) A ~~The method of claim 1~~ for enhancing the intracellular delivery of a nucleic acid-based drug in a mammal comprising administering to the mammal, in combination with the nucleic acid-based drug, an enhancer in an amount effective to enhance the intracellular delivery of the nucleic acid-based drug,

wherein said enhancer consists of a fatty acid or an ether, salt or anionic derivative thereof, wherein said fatty acid has a carbon chain length of from 8 to 14 carbon atoms;

said intracellular delivery is delivery into the cytoplasm and/or nucleus of a cell resulting in homogenous distribution of the nucleic acid-based compound in the cytoplasm and/or nucleus; and

said intracellular delivery is facilitated by contacting said cell with an effective concentration of said enhancer

wherein an inhibitor of an enzyme that degrades the nucleic acid-based drug or which transports a nucleic acid-based drug back out of the cell is also brought into contact with said cell.

62. (Currently amended) The method ~~or use~~ of claim 61 wherein the inhibitor is a P-glycoprotein inhibitor.

63. (Currently amended) A ~~The method of claim 1~~ for enhancing the intracellular delivery of a nucleic acid-based drug in a mammal comprising administering to the mammal, in combination with the nucleic acid-based drug, an enhancer in an amount effective to enhance the intracellular delivery of the nucleic acid-based drug,

wherein said enhancer consists of a fatty acid or an ether, salt or anionic derivative thereof, wherein said fatty acid has a carbon chain length of from 8 to 14 carbon atoms;

said intracellular delivery is delivery into the cytoplasm and/or nucleus of a cell resulting in homogenous distribution of the nucleic acid-based compound in the cytoplasm and/or nucleus;
and

said intracellular delivery is facilitated by contacting said cell with an effective concentration of said enhancer

wherein an endosome escape/nuclear accumulation agent is also brought into contact with said cell.

64. (Currently amended) A ~~The method of claim 1~~ for enhancing the intracellular delivery of a nucleic acid-based drug in a mammal wherein the nucleic acid-based drug is condensed by a DNA condensing agent comprising administering to the mammal, in combination with the nucleic acid-based drug, an enhancer in an amount effective to enhance the intracellular delivery of the nucleic acid-based drug,

wherein said enhancer consists of a fatty acid or an ether, salt or anionic derivative thereof, wherein said fatty acid has a carbon chain length of from 8 to 14 carbon atoms;

said intracellular delivery is delivery into the cytoplasm and/or nucleus of a cell resulting in homogenous distribution of the nucleic acid-based compound in the cytoplasm and/or nucleus;
and

said intracellular delivery is facilitated by contacting said cell with an effective concentration of said enhancer.

65. (Currently amended) A ~~The method of claim 1~~ for enhancing the intracellular delivery of a nucleic acid-based drug in a mammal comprising administering to the mammal, in combination with the nucleic acid-based drug, an enhancer in an amount effective to enhance the intracellular delivery of the nucleic acid-based drug,

wherein said enhancer consists of a fatty acid or an ether, salt or anionic derivative thereof, wherein said fatty acid has a carbon chain length of from 8 to 14 carbon atoms;

said intracellular delivery is delivery into the cytoplasm and/or nucleus of a cell resulting in homogenous distribution of the nucleic acid-based compound in the cytoplasm and/or nucleus;
and

said intracellular delivery is facilitated by contacting said cell with an effective concentration of said enhancer

wherein condensed DNA is complexed with cationic lipid and is brought into contact with said cell simultaneously with the enhancer.